

manuscript
Case
P85

(Journal of voyage of
U.S.S. Portsmouth - 1873)

Manuscripts, Portsmouth, U.S.S.

Journal ... relating to collections made in
natural history ... in the Pacific Ocean, 1873-74.



Fewkes

Journal or Notes relating to collections
made in Natural History on the U.S.S.
Portsmouth 3rd Rate engaged on the Survey
of the Pacific Ocean.

1873

May 7th Lat. 4. 51 N. Long. 123. 18 W. Water 81° air 81°
Caught while towing the net or dredge alongside
a number of minute crustaceans ~~mostly~~ (E.
entomstracæ) and numerous minute shells
and medusa

May 9th Lat. 4 32 N. Long. 127. 12. 40 W. Water 80° air 81°
Caught at night, numerous crustaceans of differ-
ent kinds and a few velella.

May 10th Lat 5. 36. 30 N Long 128. 27. 30 W. Water 80° air 80°
Passed through a patch of sea containing some
marable numbers of a species of entomstracæans
of a reddish color and large size many of
which were caught and preserved.

May 18 to 20 Lat. 18. 58 N. Long. 146. 29. 20 W. Water 74. air 72.
During the last few days we have passed
a large number of young or small flying fish
many of which were caught in the net the lon-
gest not over an inch in length. Besides the
above several other varieties were caught ~~which~~
are of a dark color body a little compressed
and tapering from head toward the tail ~~head~~
large and blunt Eyes prominent. Scales ~~small~~
white and silvery. A number of salpicans
and crustacea of various species were
taken at the same time.

During the ship's stay at Honolulu in the latter part of May and early in June a large number of species of fish crabs shells echinæ holothurians &c were obtained which were shipped to the Smithsonian Institution by Assistant Surgeon J. H. Streets.

1878

June 15

Lat. 29. 33 N. Long. 157. 22. 20 W. Water 74 to 76 Air 76

During the day we caught many *velutella* of all sizes from young to full grown individuals Two or three different species were taken & preserved

Also caught many small crabs, oftentimes they were swimming free on the surface at others resting or clinging to a *velutella* or *Physalia*.

A number of sea slugs (*glaucus*) were also taken up in the hand net. They swam ~~on~~ the surface, and difficult to perceive from their size & resemblance to color of the water. In preserving them they became very much contracted and many portions of limbs dropped off. A few young *cinclodes* were found attached to floating sea weed.

June 16/78

Lat 29. 31. 51 N. Long. 157. 37. 16. Water 74 air 74 to 76

Captured with the handnet a number of *velutella* of different species, a few *Porpita* without tentacles as they ~~adhered~~ to the net and several *Physalia* the largest of which had caught a fish two inches in length which was brought up with the *Physalia*. The fish was partially paralyzed and perfectly helpless for 15 or 20 minutes when it

began to revive and soon after was as active as ever, leaping ^{at times} several inches above the surface of the water. About the time the fish & physalia were caught the ship passed through a school of ~~skip~~ jacks which apparently were pursued by dolphins or other large fish and soon disappeared. Several small dolphins were seen around during the afternoon but none were caught.

A young trunk fish not over half inch long was caught towards evening, and many *Santhia* or violet snails were taken during the day.

Numerous ~~of~~ rafts belonging to *santhia* were seen & taken, a few being loaded with ova attached to the under side.

At night made a good haul with the surface dredge and captured many species of crustacea, *sagitta* *atalanta* minute shells &c.

June 17/73 Lat 29. 30 N. Long. 156. 37 W. Water 73. air 75 to 78

Captured numerous *Peripata* which were dipped up in a cup of water and to preserve the tentacles they were suddenly immersed in a sol. of carbonic acid in alcohol. One was floated on a plate of glass and afterwards photographed by Master Wm. Buehler U.S.N. attached to the ship. Numerous *velilla* & *physalia* were taken same day. At night in the dredge caught many varieties of crustacea, salpae and medusiform bodies.

Water very phosphorescent from the innumerable minute organisms contained.

4

1873

June 18 Lat. 29° N Long 156° W.

Ianthina very abundant. Many caught also several small crabs. Some floats with egg cases attached picked up & preserved. The egg cases when recently formed & filled with ova are nearly the color of the shell, those in a more advanced period of development are of a deep brown colour which is lost as the young drop off. Young of ianthina are furnished with cilia. The vessel ^{was} surrounded by ianthina for several days after this date.

June 24/73 Lat 34.48 N. Long 130.53 W. Water 67 to 68 Air 68 to 70

Captured in the dredge at night numerous minute crustacea among them a species comparatively rare. It is quite small with a shell or carapace on the back with long spines at the different angles sometimes nearly an inch long. Body dark colored limbs clear transparent and divided into numerous long plumose filaments.

July 13th Lat 27.50 N Long. 138.56 W. Water 69 air 69 to 70

During the day caught several large crustaceans of a kind rarely met with at that time. At ^{night} only a few snails minute shells and small crustacea.

July 21st Lat 25.22 N. Long. 133.12 W. Water 69 air 67

Captured a delicate transparent fish about three inches long a species of *Leptocephalus* when put into alcohol it became opaque but regained its transparency on adding glycerine.

an annelid and several crustacea were caught the same evening

1873

July 25

Lat 25.50 N. Long. 132.45 W. Water 68 air 68

Caught numerous crustacea of different varieties and several fishes of small size, some resembling those caught on May 18 & 20, in 18° North.

During the ship's stay at Honolulu S.I. in parts of August & September many interesting additions were made to the collections of fish, crustacea, echin and mollusca which were forwarded to the Smithsonian Institution by the "St. Costa Rica"

A lot of skulls obtained from the old burial grounds of the Natives that formerly lived on the plains of Waimanalo Oahu were also forwarded. Numerous centipedes, lizards, lizard eggs and spiders were collected from different parts of the island during that time.

1873

October 17

While cruising between Kauai & Oahu we saw numerous flocks of Plover crossing from the former to the latter distant about 80 miles. Several becoming exhausted settled on the ship, were captured and the skins preserved. Numerous sharks seen but none caught. While to the S & W of Kauai large quantities of sea weed in small detached pieces were passed. It consisted of several varieties, a few specimens resembling

the Gulf weed of the Atlantic & probably identical, but the largest proportion ~~contained~~ was composed of a thick coarse spongy weed made up of large cells and rather glutinous to the feel, color a deep green. It resembles somewhat the edible sea weed of the Islands but is coarser. Many specimens were picked up and with them two species of fish. The fish were swimming about & apparently feeding on the weed. One variety of the fish was of a silvery color the other a beautiful variegated color brown & yellow. Several species of crabs were also picked up with the ~~crabs~~ bunches of weeds and another was taken from the ship's side where he was clinging to the copper.

1873

Oct 21

Lat 21. 44. 40 N Long 161. 20. 20. W water 82 air 79
This afternoon caught a shark 8 feet long weight 260 pounds, female, pregnant with eleven young fully developed, the smallest 24 inches long the rest from two to four inches longer. Each young was enclosed in its own set of membranes and nourished by a separate placenta which was $2\frac{1}{2}$ inches in diameter and $\frac{3}{4}$ inch thick. The cord was $2\frac{1}{2}$ feet long and about $\frac{3}{8}$ inch in diameter. The majority of the young were females only two males were noticed, but they were not all examined to determine the exact number of each sex. Nothing of interest was found in stomach of parent beyond some tin cans. A Remora attached to the body of the shark was also captured & preserved.

The large shark was skinned, and the skin with the head and two of the young preserved in alcohol.

On the following day another female shark companion to the one caught, was captured and the jaws preserved.

1873

Oct 29

Lat 19. 26. 30 N. Long 167. 04 20 W. Water 80 air 81
A large school of dolphins (*Delphinus delphis*) around the ship. Stopped to examine a log drifting by, from which were taken a lot of barnacles, several crabs, and a large megalopa. During the night a flying fish 6 or 7 inches long flew on board through a gun port, and was put in alcohol.

Nov. 11th/73

Lat 16. 49. 47 N. Long 161. 53 W. Water 80 air 80
A large school of dolphins (*Delphinus delphis*) followed the ship for several hours. They were of all sizes and were followed on the outskirts by numerous sharks. The sharks followed us afterwards for 24 hours but none were caught.

Nov. 12th

Lat, 16. 38 06 N. Long. 161. 57 W. Water 80. air 78 to 80
A few fish and several varieties of crustacea and naupliiform larvae (probably of squillae, with large shield like carapace were collected during the last few days & nights.
In towing tonight caught a fine glass crab or *Phyllosoma*, in very good preservation.

Nov. 13/73 Lat. 17.46.47 N. Long 161.20.50 W. Water 79 to 80 air 78.80

Captured a gannet during the day, and at night a lot of small fish, and several crustacea, One of the larvae of squilla? and another of a different species with a large heavy carapace and of a reddish or pink color when alive. Rare. The Gannet was skinned and preserved.

Nov. 14 Lat 16.33. N. Long. 160.54. W. Water 79.80. air 79.80

Captured another large phyllisoma in towing this evening.

Nov 25- Lat. 10.25 N. Long. 168.07 W. Water 79°80' air 79.77

In towing dredge collected several varieties of fish crustacea, pteropoda shells &c. Amongst the fish was a minute globe fish not over $\frac{3}{8}$ inch long of a greenish color with minute light colored spots over the surface. ~~A rare specimen~~

Nov. 27 Lat 8.37.19 N. Long 168 W. Water 81 air 83

Captured several varieties of fishes fragments of annelids and a feather & ^{covered with} larvae.

The largest of the fish was of a brilliant red colour with numerous silvery spots in lines on sides and belly. Most of the scales had been removed by friction against the net but what remained shone with a bright metallic lustre. The next largest was of a dark brown almost black colour skin roughened. Eyes prominent head broad. Pectoral fins enormous. Ventrals also ^{very} large.

The fins of the latter were also much frayed by friction. The remaining fish were of small size and among them is a spiny flying fish differing from those caught previously in the reverse striping of body & unusual length of fins.

1873

Nov 28

Lat 8. 18. 27 N. Long 166. 43 W. Water 81 to 82 air 80 to 84

Caught nothing but a Megalops, a few small crustacea and a medusa.

Dec. 1

Lat 6. 52 27 N. Long 166. 02. 30 W 82 a 83

Made a small collection of very small fish in the morning watch, They appear to be similar in structure and shape to specimens caught before but less developed.

Dec 7th

Lat 5. 52. 54 N Long 164. 01. 50 W Water 82 air 81

On the night of the fifth instant captured two different species of Pyrosoma and this evening caught three more one of which differs from those taken on the fifth.

One of the specimens is about three inches long cylindrical in shape tapering slightly toward the posterior end. A second is about the same length but flattened and tapering the third is of oval shape and instead of having rough projections over the surface, it presents a honeycombed appearance of hexagonal cells or spaces. They were all taken on very dark nights and were remarkable for the brilliant phosphorescence which they displayed when

disturbed by the passage of the ship through the water or other causes. Judging from the appearance of the water they were comparatively very numerous although succeeded in catching but few of them, and all of those before 10 P.M. Towed nets for them during the day but to no purpose.

On the same night also obtained a *Phyllosoma* and numerous salpa some of very large size which were preserved in a sol of glycerine alcohol & carbolic acid in sea water. ~~And~~ promises fair to retain their shape and transparency.

On the fifth instant a large number of crustaceans were captured including many different species. Lat Long.

1873

Dec 13 Lat 5.38 N. Long 161.55 W. Water 82 air 80

In towing net caught many varieties of small crustaceans and a few salpae but none examined.

Dec 11-14 Numerous salpians of different sizes caught to the westward of Palmyra island between the 11th & 14

Dec 14/73

The ship anchored off Palmyra Island on Dec 14, 1873, and remained until the 27th. During our stay there we collected about forty different species of fish, many of the smaller varieties from the lagoons and shallow waters of the shore platform, the remainder outside the reef, around where the ship was anchored. The fish exist in the greatest abundance and many varieties are excellent eating. I do not suppose that one half the species existing in the waters around the island and ~~and~~ the lagoons are represented in the collection, but all were procured that our facilities for pursuing and catching enabled us to get in the time we had to devote to the subject. Many species were occasionally seen which are not represented and we heard of others, but so difficult to obtain that it requires special methods to secure their capture.

One Cuttlefish (*Octopus*) was obtained. Eight or ten species of crustacea; seven species of Echini; one of Asteroi; one of Solaster; one Ophiurian, five species of Holothurians, one of Synapta, many species of mollusca and shells and two or eleven species of corals.

Palmyra is purely a coral island. It consists of fifty eight small islets arranged in the form of an elongated mass.

open to the westward and inclosing four separate lagoons. The islets are separated by narrow channels, through which the water has free access to the lagoons. At low water a broad interior shore platform of fine coral sand extends from one side of the island to the other and forms distinct boundaries for the lagoons and connects most of the islets together. It forms a barrier which is almost dry at low water, which connects the two westernmost ends of the island, there being no lagoon outlet except over it at high water.

The outer shore platform is about three hundred yards wide and is covered with coarse coral debris. From the northern and southern ends of the lureshoe, the water breaks for a mile or more and from the northern end it shoals round in a curve to the southward three or four miles from land.

The island presents very scanty evidence of any other agencies having been at work in its formation, except the coral insect and action of the waves. The highest point is only seven feet high. In no place has the reef rock been upheaved unless an elevation of a few inches might be supposed.

from the rock of beach formation, which in places has been raised into a horizontal position beyond the reach of the tides and shows the erosive action of the waves upon the old rocks, undermining them in places, and leaving exposed shells of tiddacms etc. imbedded in the places where they originally grew. Some of the shells thus exposed were in a comparatively good state of preservation while others were so much decomposed that they were destroyed in the attempts to remove them. The place where this condition of things was found is one of the eastern islets, and where the outer shore platform is almost dry at low water and only covered by a few inches at high tide while the excavations in the old rocks are at least two or two and a half feet above the level of high water at the present time.

The islets to the eastward were probably the first formed. On these the vegetation is denser and ranker, more genera are represented and the cocoanut trees are more numerous and older.

The island is thickly covered with vegetation but the number of species is few.

Of forest trees, there are the cocoanut (*Cocos nucifera*) pandanus or screw pine,

(*Pandanus odoratissimus*) a species of *Boerhavia*, the Banyan tree, and two others not determined but called in the Tahitian language the "tihenue" and "rawa".

Of the herbs there are a species of *Muslane* (*Portulaca*) a pepper grass (*Lepidium*) a species of (*Convolvulus*), of the genus *Sponia* and two other herbs not determined.

On the islets to the north east the *Sponia* covers the ground like a carpet and completely shrouds the trees. It seems to grow in the greatest luxuriance where the ground is composed of nothing but coral debris.

There are also a species of grass and two ferns of the genera *Asplenium* and *Polopodium*. The *Asplenium* forms a dense undergrowth on the islets to the eastward. Three other families of Cryptogamous vegetation, Mosses, Fungia and Lichens are represented.

The largest number of genera are represented on the windward islets. Here it seems the germs of vegetable life are first caught and afterwards diffused to the westward.

There are several large logs of Oregon red wood laying up along the shores of the islands west

of them within the lagoon enclosure on the weather side. They are from five to ten feet long and from four to five feet in diameter.

We arrived at the island in the breeding season of the birds. The genus *Sula* is largely represented. There are three species of this genus, one booby and two gannets. The former makes a nest of grass on the ground, the latter builds a very rude nest of twigs on the bushes and small trees.

The boobies were just laying their eggs, while the gannets had theirs all hatched and the trees were white with their young.

The larger part of the birds belong to the Linn family (*Sterna*). Of the sooty tern or noddies there are two species.

The larger builds its nests on the coconut trees at the base of the leaves, the smaller makes a nest of twigs in the forks of the other trees. There is a little white Linn which lays its eggs on the naked branches of the trees.

The guano or mutton bird (*Pluma*) are very numerous. They make no nest but lay their eggs on the bare clinker or coral beach. They herd together in such ~~such~~ numbers that it is difficult to walk without treading on their eggs.

When they rise they darken the sun and their noise deadens the roar of the surf.

Their breeding place is on the extreme eastern islets. The other birds are the Frigate bird or man of war hawk (*Lachyptis aquila*) the curlew, the golden backed plover and two species of snipe. The Tropic bird (*Phaethon*) is sometimes seen but he is only a visitor.

A few spiders of large size were found on the island. They are quite harmless. Several small lizards and lizard eggs were also found.

The island is inhabited by one American and eight natives (male & female) from Tahiti, who are employed in collecting cocoa nuts to make Cobrac or Kobrac for exportation. The island is not very productive at present but may become so in time after all the islets are planted with the coconut tree.

There is no fresh water on the island, and those living there have to depend on what they collect from the rains for their subsistence. This is apparently an easy task as it rains nearly every day and the only provision made for collecting water is a large iron kettle, set under a coconut tree, which is kept full by the dripping from the leaves.

Jan. 1st/94 Anchored off Washington Island. This is the most elevated island in Fanning's group, and is densely covered with coconut trees. In the centre of the island is a large fresh water lake, and in it is found a species of eel growing to a large size. I was informed by Mr Bicknell one of the owners of the island and a resident there for the last ten years that he has caught them weighing 15 to 18 pounds. Owing to our short stay I was unable to procure specimens of them.

Obtained several Parquets four Robber crabs (Birgus) and a lot of small shells of various species from the natives. Also 1 Duck & 1 Flycatcher.

The proprietor Mr Bicknell employs about 25 natives (brought from different islands in the Pacific) in collecting coconuts and the manufacture of oil. This island is at present the most productive in the group.

Jan. 4/94 Fanning's island, lay off and on during the day unable to anchor on account of the heavy swell. This island was at one time very productive in coconuts affording employment to about three hundred natives. At present it is occupied by Mr Gigg who employs about fifty natives. According to his statement the trees are dying off, caused by want of rain and a severe blight which has attacked them and spread over the principal

part of the island.

When a tree is attacked the leaves lose their bright green color turn yellow and wither, the cocoa nuts drop off before they mature and many of the trees die. In some cases the sap is seen dripping or running down the stem of the tree. Could get no information as to the cause of the disease or blight affecting the trees. The appearance of the trees even from a distance shows that they are affected by some cause which has impaired their vitality. I was informed that within the last few months there has been an improvement in the bearing of the trees, and an increased ^{in the} number of mature cocoa nuts.

Jan 13/74 Anchored off Christmas Island and sailed again on the 28^d. This is the largest island of Fanning's group, of coral formation enclosing a large lagoon. There is no fresh water on the island and it is almost bare of vegetation excepting low bushes and stunted bushes. On the northern part of the island a few cocoa nut trees can be seen. Numerous birds have their homes here including several species (2) Gannets, Petrels, Puffins, Lropic bird,

one Gull, a dove colored Tern a Flycatcher, and a Sandpiper of the genus (*Linga*). Curlew and snipe.

The waters in the lagoon and around the island abounded with fish in the greatest profusion, comprising many species and of almost every variety of form size and color native to the tropics. Enough were caught from day to day, to supply the whole ships company.

In consequence of having no alcohol which was all expended at Palmyra Is. but few specimens were preserved.

Many of the varieties caught at Palmyra were seen, and others were caught which were not represented in the collection from Palmyra. Among the latter was a large green fish weighing from 20 to 30 pounds with unusually large scales. Two of these were preserved in salt and one was skinned.

Several fish of the genus *Hemiramphus* family (*Esocus*) were caught while swimming in the lagoon. Mullet of large size & fine flavor are very abundant.

The family of *Percoides* is represented by a great many species, *Dromboides* by 4 or 5 species.

Chintys by *Acanthurus* & *Prionurus*. Several species of sharks were seen some of large size.

Echini and holothurians were seen in great numbers and variety.

Asterias but one specimen caught, brought up from 9 fathoms. Several species of crustacea (crabs) caught along the shore

Several turtles (sea) were seen but all escaped capture. The number and variety of shells was less than I expected to find and the majority found were much worn. Owing to the nature of the bottom, dredging for them was out of the question.

List of Birds Eggs obtained

- 1 Sula. (Gannet) Christmas Island 22.11.23 female
- 2 Sula Booby Palmyra ~
- 3 Sula. Gannet Christmas Island 6.4.3
- 4 Porcellaria (Petrel) Christmas ~ 25.26
- 5 Sterna (Muddy) Palmyra ~ 13
- 6 Sterna ~ Palmyra ~
- 7 Sterna ~ Palmyra ~ 8.9.14
- 8 Sterna Palmyra island,

Amongst the vegetation on Christmas Island were found species belonging to the following families viz Malvaceae, Lobeliaceae, Zygophyllaceae, Euphorbiaceae, Crassulaceae, (chiefly allied) two species grasses, one Lolium (Darnel)

Dry Specimens collected by Dr Streets prior to my joining the vessel

- 1 Albatrop from off Cape Horn
- 2 & 3 Procellariæ from the same locality.
- 4 Coleopterous insects blown aboard the ship by the North east trades between 10° S. and 30° W. Longitude. Habitat probably Cape Verde.
- 5 Owl from the vicinity of Talcahuana Chile
- 6 Penguin from the Bay of Concepcion Chile
- 7 Cormorant from Talcahuana Chile
- 8 Albatrop caught to the eastward of the Sandwich Islands.

Oct. 78.9. Plover flew aboard the ship. Northward of Kauai I. I.

- 10 & 11 Gannets flew aboard the ship to the westward of Kauai I. I.
- 12 " " " " " " " "
- 13 Noddy Caught aboard the ship about lat. 19° N. Long. 165° W.

Alcoholic Specimens

- No. 1 Cephalopod (Loligo) from east of the Bermudas
- 2 Barnacles from off the Falkland islands
- 3 Asterias from the Bay of Concepcion. Chile
- 4 Variety of specimens from the Bay of Concepcion
- 5 " " " " " " the shores of the Bay of Concepcion.
- 6 Shells and lizards from Talcahuana Chile
- 7 Holothurian and sea slug from Honolulu Sandwich Islands, also contains No. 6.

- 8 Fish from the harbor of Honolulu S. I.
 9 Specimens from harbor of Honolulu S. I.
 { 10 }
 { 11 } Crustacea from the harbor of Honolulu S. I.
 { 12 }

Jan 25/74 Lat 7. N. 152 West.

Crabs annelid and barnacles (Cirripes) taken from a box found 18 or 20 days after being thrown overboard from this ship in near the same latitude.

March 28/74 Lat. 26 N. Long. 156. W. W. 68.9 air 72

To night were caught in the dredge several species of pteropoda (*Hyalea Cuvierii*) among the number. Two species of worms slightly mutilated, sagitta salpicans, medusae, a small fish and a few crustacea. Animal life apparently is not very abundant ^{at this season of the year} in the track we are now sailing over or if it does exist it does not approach the surface. This may be due to having bright moonlight nights as I have frequently noticed that ~~when~~ fewer objects are caught on bright moonlight nights than on dark nights (moonless) or when the moon is obscured by heavy clouds. even when sailing almost over the same grounds. and when temperatures are unchanged.

Have had the dredge out several times during the last few nights but with no success. Cruising over the same ground six or

months ago there was an abundance of animal life to be seen in the water.

Passed a few pelicans a day or two ago.

Caught a large Albatrop during the day. Skinned

1894

March 31 Lat 28.03 N Long 152.38 W. W 67. a 66
Contains a Cephalopod (Loligo) caught at night
Ship going 6.4 knots
Later caught numerous species of crustacea
(some rare) Salfians medusae shells and
several species of Pteropoda & ^{an} annelid.

April 3 Lat 29.49 N Long 149.51 W. W 65. a 66
Captured a remarkable specimen in the
shape of a long slender eel about 12 or 14 in
ches long. Head large tapering towards the mug-
gle, lower jaw prolonged into a long slender
beak covered with recurved teeth on upper side.
Upper jaw terminates in a point. Eyes large
Pectoral fins well developed. Anal and dorsal
fins commence nearly opposite each other and
can be traced into the filamentous part of
the tail. Body tapers from the head backwards
and the last three or four inches is a minute
filament but little thicker than a horse hair.
Back & sides speckled with minute dark spots
under side white.

At the same time captured a Leptoceph-
alus. Slightly injured, one Megalopoda &
two small Cephalopoda. One of the latter
was alive & quite active. The four upper

arms were of a light brown tinge and longer than the inferior

On the same night but later caught a lot of crustacea, medusa, annelids & some minute animalcules

During the last few days a number of Albatrosses were captured, of both sexes and the skins preserved.

Surface Temperatures observed on the USS Portsmouth during 1873 and 1874

Date	Latitude	Longitude	Temp. of air	Temp. of surface	Hyd	Remarks
1873						
July 3 ^d	27. 47. 07 N	143. 00. 30 W.	72	70	25	
" 4	26. 38. 20. "	142. 09. 15. "	71	70	25	2.85. Chl. + sta. base
" 5	27. 09. 00 "	142. 08. "	70	71	25	
6	27. 22. 34 "	141. 47 "	72	70	25	
7	27. 05. 05 "	141. 11. 45. "	71	69	25	
8	27. 22. 30	141. 00. 40. "	70	69	25	
9	27. 42. 26.	140. 49. 00 "	72	70	25	
10	27. 54. 49	140. 18. 50 "	71	70	26	3.65. Chl. + sta. base
11	27. 54. 08.	139. 48. 35.	70	69	25	
12	27. 37.	139. 27 "	69	69	25	
13	27. 50. 08.	138. 56. 14.	69	69	25	4/10 ct. solid matter
14	27. 15. 20.	138. 13. 50. "	70	68	26	3.65 Chl. + sta. base
15	26. 55. 30.	137. 57. 00	68	68	25	
16	26. 02. 30.	136. 55. 50	68	67	25	
17	25. 40	136. 18. 07.	69	67	26	
18	25. 59. 49	135. 48. 50	69	68	26 1/2	4/10 ct. solid matter
19	25. 40. 43.	134. 50. 15.	69	68	26	
20	26. 15. 35	135. 13. 30.	69	68	26 1/2	
21	25. 22. 30	133. 12. 50	68	68	26 1/2	3.65. Chl. + sta. base.
22.	25. 29. 24	132. 55. 40	70	68	26	
23	25. 40. 37	133. 08. 30	70	68	26 1/2	
24	25. 42. 29	132. 45. 07	68	67	26	
25	25. 59. 21	132. 22. 27	70	67	26 1/2	
26	26. 01. 33	131. 39. 10.	68	68	26	
27	25. 09	133. 56. 40	69	68	26 1/2	
28	24. 43	135. 52. 40	71	70	26	
29	24. 24. 10	137. 15. 30	72	71	24 1/2	3.05 ft. of solid matter

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Date	Latitude	Longitude	Temp. fair	Temp. water	Hydro meter	Specific Gravity of sea water 15° Celsius	Remarks
1873							
July 30	24.09. A	138.27.50	72	72	24		
" 31	23.48.00	140.19.30	74	71½	24		
August 1	23.19.00	142.48.20	74	73	24		
" 2	22.16.14	145.46.30	75	73	24		
" 3	21.38.52	148.39.40	77	75	24		
" 4	21.23.45	151.38.25	77	74	24		
" 5	21.15.15	154.18.55	78	76	23½		
At anchor off Honolulu S.I.							
Oct. 11	21.31.09	161.21.20	79	79	23	(26°C) .790	
" 12	20.37.03	160.33.45	79	78	23	(26°C) .790	
" 13	20.43.14	160.37.00	77	78	23	(26°C) .790	4 pr ch salts.
" 14	21.00.18	159.10. "	78	79	22½	(27°C) .789	
" 15	21.12.29	159.04.45	76	79	23	(26°C) .790	
" 16	21.12.12	159.03.30	78	78	22½	(26°C) .790	
" 17	22.49.00	159.04. "	78	79	23	(26°C) .790	
" 18	23.52.50	159.42.50	77	78	23	(26°C) .790	
" 19	24.01.54	160.04.40	78	78	23	(27°C) .790	
" 20	22.21.30	160.44.50	78	78	22½	(27°C) .790	
" 21	21.44.40	161.00.20	79	82	23	(28°C) .790	
" 22	21.03.33	161.38.25	80	79	23	(27°C) .790	
" 23	19.08.43	162.21.30	82	80	23	(28°C) .790	
" 24	19.22.30	163.20.00	81	80	22	(28°C) .790	3.4 pr ch salts.
" 25	19.25.38	164.22.00	81	80	22½	(27°C) .790	
" 26	19.31.36	165.20.42	81	80	23	(27°C) .790	
" 27	19.27.16	166.04.30	80	80	22½	(28°C) .790	
" 28	19.58.21	166.36.40	79	79	23	(27°C) .790	
" 29	19.26.30	167.04.20	81	80	22½	(28°C) .790	
" 30	19.57.37	167.45.10	80	79½	22½	(27°C) .790	
" 31	19.49.14	168.09.40	80	81	22	(28°C) .790	

Date	Latitude	Longitude	Surf of air	Surf of water	Hydro meter	Spec. Gravity by hydrometer (150° Celsius) Bottle	Remarks.
1873							
November 1 st	20.00 37	167.36.40	81	79	23	(27°6) .790	
" 2	19.54 00	166.49.45	80	80	23 1/2	(27°6) .791	3.6 per cent salts,
" 3	18.11.34	165.34.45	79	79 1/2	22 1/2	(27°6) .790	3.4 per cent salts.
" 4	16.15.10	163.58.30	79	79	23	(27°6) .790.5	3.2 per cent salts.
" 5	16.29.50	164.00.00	79	80	22 1/2	(27°6) .790	
" 6	15.46.30	163.12.30	78	79	23	(27°6) .790	
" 7	16.58.27	163.29.39	79	79	23	(27°6) .790	
" 8	16.33.00	164.54.00	80	79	23	(27°6) .790	
" 9	16.47.00	163.38.25	80	79	23	(27°6) .790.5	
" 10	16.57.00	162.54.	80	80	23	(27°6) .790.5	3.6 per cent salts,
" 11	16.49.47	161.53.00	80	80	23	(27°6) .790	
" 12	16.38.06	161.57.10	80	79	23	(27°6) .790	
" 13	17.45.47	161.20.50	80	80	22 1/2	(27°6) .790	
" 14	16.23.00	160.54.00	80	80	23	(27°6) .790	
" 15	16.40 "	160.50.30	80	79	22 1/2	(27°6) .790	
" 16	13.42.10	161.30.00	81	80	22.	(28°6) .789.9	
" 17	11.20.19	163.01.05	81	80	22.	(28°6) .789.8	3.4 per cent salts,
" 18	11.21.22	164.00.50	80	80	22 1/2	(28°6) .789.8	
" 19	10.22.07	164.39.00	81	81	21	(28°6) .789.9	
" 20	13.06.49	165.57.40	80	80	22	(27°6) .789.9	
" 21	13.14.30	165.43.25	80	79	22	(28°6) .790	
" 22	10.29.40	164.55.	82	81	22	(28°6) .789.6	3.6 per cent salts,
" 23	12.23.03	167.42.45	80	80	22	(27°6) .790	
" 24	13.25.00	168.12.00	80	79	22	(28°6) .790	
" 25	10.25.54.	168.07.30	77	80	22	(28°6) .790	
" 26	9.18.06	167.57.00	79	81	22	(28°6) .790	
" 27	8.37.19	168.06.10	83	82	22	(28°6) .790	
" 28	8.18.57	166.43.50	83	82	21	(28°6) .790	
" 29	8.15.34	165.40.45	82	82	21 1/2	(28°6) .790	
" 30	6.35.19	166.20.00	83	82.	22	(28°6) .790	

Date	Latitude	Longitude	Surf. of air	Surf. of water	Hydro- meter	Sp. Grav. 50° 15° Bottle	Remarks
December 1873							
1 st	6.52.27 N.	166.02.30 W.	83	82	22	(28½°C) .790	3.8 per cent salts
2 ^d	6.25.01 "	166.05.09 "	83	83	22	(28½°C) .790	
3	6.03.52 "	166.17.54 "	84	82	21½	(29°C) .790	3.6 per cent salts
4	7.01.39.	164.26.42.	83	82	21½	(29°C) .790	
5	5.41.40.	164.58.20.	83	83	21½	(29°C) .790	
6	5.45.35	164.38.	83	82	21½	(29°C) .790	
7	5.52.54	164.01.50	81	82	22	(28½°C) .790	
8	6.33.03.	163.29.50	83	82.	21½	(28½°C) .790	
9	6.08.	162.49 10.	83	82	21½	(28½°C) .790	
10	5.40	162.47	80	82	22	(28½°C) .790	
11	5.34.	162.21	83	82	21½	(28½°C) .790	
12	5.23	162.04.	77	81	22	(28°C) .790	
13	5.38	161.55	80	82	22	(28°C) .790	3.2 per cent salts.
14	At anchor off Palmyra Island.						
28	4.51	162.05.	83	82	22	(28°C) .790	
29	5.26.	161.32	77	82.	22	(28°C) .790	
30	4.46.	161.25.	82	82.	22	(28°C) .790	
31	4.42.	160.18.	78	81	21½	(28°C) .790	
1874	At anchor off Washington Island						
January 3	4.37	160.05	82	81	22	(28°C) .790	3.6 per cent salts.
" 5	4.44.	158.12	82	81	22	(28°C) .790	
" 6	5.37	157.25.	80	80	22	(27°C) .790	3.6 per cent salts.
7	5.25.	156.27	81	80	22	(27°C) .790	
8	5.15.	156.80	81	80	23	(27°C) .790	3.6 per cent salts.
9	6.15.	155.22	80	80	23	(27°C) .790	
10	5.49	154.33	82	81.	22	(27°C) .790	
11	5.00	154.22	83	80	22½	(27°C) .790	3.6 per cent salts.
12	4.43	154.06	81	80	23	(27°C) Spec. Grav. Bottle broken	
13	2.37.49 N	154.52.15	81	78	23	(24°C)	3.8 per cent salts.
14	1.30.03	157.17.40	82	79	23		

Date	Latitude	Longitude	Surf. air	Surf. water	Surf. 46 fms	Surf. 100 fms	Remarks
1874							
January 15	At anchor off Christmas Island		83				
" 16			82	78	(23.5°)	3.9 per cent of salts.	
" 23	2.50.54 N	157.20.45 W	79	78	22 1/2	25.5°	
" 24	5.12.54 "	156.05.30 "	82	80	22 1/2	2	
" 25	6.27.00 "	155.58.00 "	79	81	22 1/2		
" 26	6.47.22 "	154.40.40 "	81	80.2	23.	(27°)	
" 27	6.47.42 "	155.50.00 "	81	80.5	22 1/2	28	
" 28	8.48.14 "	153.33.00 "	81	79.3	22		
" 29	10.52.48	153.50.30	79	78.	22		
" 30	14.31.55	154.56.50	79	76.2	22		
" 31	17.23.20	156.28.00	77	75.3	23 1/2		
February 1 st	19.00.00	157.06.00	77	75.3	23		
" 3	At anchor off Honolulu		79				
March 25	23.07 North	158.18 W.	70	70.8	1.024	4 percent of salts	
" 26	24.21 "	158.58 "	70	69.4	1.024	4 " " " "	
" 27	25.23. "	157.50 "	71	69.4	1.024	4. per cent of salts	
" 28	26.23. "	156.12 "	72	68.9	1.025	3.9 " " " "	
" 29	26.59 "	155.04 "	72	68.	1.025	3.9 " " " "	
" 30	27.21 "	154.53 "	73	67.4	1.025	3.9 " " " "	
" 31	28.03 "	152.38 "	66	67.4	1.025	3.9 " " " "	
April 1	27.32 "	147.08. "	64	67.4	1.025	3.9 " " " "	
" 2	28.42 "	149.40 "	64	65	1.025	3.9 " " " "	
" 3	29.49	149.51 "	66	65.6	1.025	3.9 " " " "	
" 4	31.29	149.35 "	64	63.6	1.026	3.8. " " " "	
" 5	32.49	146.40 "	64	60.4	1.026	3.8 " " " "	
" 6	33.26	142.32	63	60	1.026	3.8. " " " "	
" 7	34.51	138.40	62	59.	1.026	3.8 " " " "	
" 8	35.54	134.04	61	58	1.026	3.8 " " " "	
" 9	36.26	129.57	57	55.2	1.026	3.7 " " " "	
" 10	36.45	127.18	54	53.5	1.026	3.7. " " " "	

Surf. 46 fms
Surf. 100 fms
Bottle

By 1000
Bottle
62° Fahrenheit

No regular journal was kept during the cruise, and the foregoing was made up from detached notes written out from time to time as objects of interest were collected.

The collections in Ornithology and Botany were principally made by Assistant Surgeon J. H. Streets, who also determined the surface temperature and readings of the Hydrometer made daily at noon.

The determinations of the Specific gravity (by scales & specific gravity bottle 50 grammes 15° Celsius and 1000 grains 62° Fahrenheit) of surface ~~temperatures~~ surface temperature, and the percentage of salts in the surface water were made by the Apothecary Mr E Dimpflman.

My attention was mainly devoted to surface dredging at night whenever the speed of the ship would allow it to be done, and to the collection of marine objects on the beach and sea shore whenever opportunity occurred.

Many interesting specimens were added to the collections and much valuable assistance was rendered by the Officers and crew of the ship.

Wm H Jones
Surgeon U.S.N.

U.S.S. Portsmouth
July 20th 1874

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